



PIER Energy-Related Environmental Research

Environmental Impacts of Energy Generation, Distribution and Use

Monitoring System for Studying Avian and Wildlife Interaction with Power and Communication Facilities

Contract #: 500-01-032

Contractor: EDM International, Inc.

Exploratory Grant Amount: \$252,000

Match Funding: \$73,900

Contractor Project Manager: Richard E. Harness

Commission Project Manager: Linda Spiegel

Commission Contract Manager: Brian James Walton

The Issue

Bird collisions with overhead power lines and communication towers are of increasing concern to utilities, regulatory agencies, and environmental organizations. Monitoring these structures by foot surveys to determine the extent of the problem is very time consuming and expensive; however, there is a need to collect information to better define the problem and to determine the effectiveness of potential solutions. In response to this technology gap, PIER has been sponsoring the development of a remote sensor called the Bird Strike Indicator (BSI) to determine if it can be cost-effectively used to capture information from remote locations.^{1,2}

Marking power lines with diverters can be an inexpensive measure to mitigate collisions by making the line more visible to birds, but the efficacy of that measure is poorly understood. If successful, the BSI could help determine the number of bird strikes before and after marking the lines, thereby determining the treatment's effectiveness.

Project Description

This project's purpose is to field test an array of Bird Strike Indicators on a power line by comparing the strike information collected from the Bird Strike Indicator to information (bird carcasses) gathered by foot surveys. If the Indicator is shown to be successful at detecting bird strikes, a second goal is to determine the effectiveness of various marking devices.



Bird Strike Indicator

¹ Byrne, S. 2002. *Bird Strike Monitor*. California Energy Commission Consultant Report. P500-97-010.

² EPRI. 2003. *Bird Strike Indicator/Bird Activity Monitor and Field Assessment of Avian Fatalities*. California Energy Commission Consultant Report. P500-03-107F.

The Bird Strike Indicator is an impulse-based vibration sensing and recording tool to study bird strikes on aerial cables. When a bird strikes a wire, sensors capture the induced vibration waveform and automatically send it to a remote base station. The strike information is then reported to the utility company.

EDM is conducting on-site testing of the BSI at the Audubon National Wildlife Refuge in North Dakota. This site was selected because a transmission power line parallel to U.S. Highway 83 between Lake Audubon and Lake Sakakawea has a history of bird collision problems. Testing is being done in partnership with Western Area Power Administration, the United States Fish and Wildlife Service, the Avian Power Line Interaction Committee, and others.

Three spans with a history of collisions will be instrumented with BSIs. Field observers will monitor strikes recorded by the BSIs while also conducting pedestrian surveys under the power lines. These daily inspections will be designed to determine if the BSIs are recording bird strikes.

Researchers anticipate that these technologies will enable power companies to remotely detect bird collisions with power lines, as well as to acquire information on which wires are primarily involved in avian collisions, thereby allowing the utility to properly select the proper wires for marking.

PIER Program Objectives and Anticipated Benefits for California

This project offers numerous benefits and meets the following PIER program objectives:

- **Providing environmentally sound energy services and products.** If power companies can remotely detect bird collisions with power lines, they will be able to increase mitigation efforts in areas that are experiencing the most problems, thereby reducing avian mortalities from this cause.
- **Providing affordable energy services and products.** By identifying the most effective remote sensing devices, power companies will be able to reduce the costs of addressing bird collisions with power lines and communication towers, by reducing the need for expensive field surveys. More effective mitigation could lead to less avian-induced power outages as well, which can be costly to end users.

Final Report

PIER-EA staff intend to post the final report on the Energy Commission website in Spring 2007 and will list the website link here.

Contact

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